U 013067-1
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# THE UNITED STATES OF AMERICA

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**APPLICATION NUMBER:** *60/551,714*
**FILING DATE:** *March 10, 2004*

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Practitioner's Docket No. U 015067-7 *PATENT*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: KRISTIAN KNAK NYGAARD, et al

For: SYSTEM FOR DOWNLOADING TELEVISION INFORMATION TO EXTERNAL DEVICES AND MEDIA

**Mail Stop Provisional Patent Application**
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## COVER SHEET FOR FILING PROVISIONAL APPLICATION (37 C.F.R. § 1.51(c)(1))

*WARNING:* *"A provisional application must also include the cover sheet required by § 1.51(c)(1) or a cover letter identifying the application as a provisional application. Otherwise, the application will be treated as an application filed under paragraph (b) [nonprovisional application] of this section." 37 C.F.R. § 1.53(c)(1).. See also M.P.E.P. § 201.04(b), 6th ed., rev. 3.*

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**CERTIFICATION UNDER 37 C.F.R. 1.10***
*(Express Mail label number is mandatory.)*
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I hereby certify that this correspondence and the documents referred to as attached therein are being deposited with the United States Postal Service on March 10, 2004 , in an envelope as "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10 Mailing Label Number EV 327552765 US addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

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*WARNING:* *Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.*

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**EXPRESS MAIL LABEL NO.: EV 327552765 US**

*NOTE: "A complete provisional application does not require claims since no examination on the merits will be given to a provisional application. However, provisional applications may be filed with one or more claims as part of the application. Nevertheless, no additional claim fee or multiple dependent claims fee will be required in a provisional application." Notice of December 5, 1994, 59 FR 63951, at 63953.*

*"Any claim filed with a provisional application will, of course, be considered part of the original provisional application disclosure." Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,209.*

*NOTE: "A provisional application is not entitled to the right of priority under 35 U.S.C. 119 or 365(a) or § 1.55, or to the benefit of an earlier filing date under 35 U.S.C. 120, 121 or 365(c) or § 1.78 of any other application. No claim for priority under § 1.78(a)(3) may be made in a design application based on a provisional application. No request under § 1.293 for a statutory invention registration may be filed in a provisional application. The requirements of §§ 1.821 through 1.825 regarding application disclosures containing nucleotide and/or amino acid sequences are not mandatory for provisional applications." 37 C.F.R. 1.53(c)(3).*

*NOTE: "No information disclosure statement may be filed in a provisional application." 37 C.F.R. § 1.51(d). "Any information disclosure statements filed in a provisional application would either be returned or disposed of at the convenience of the Office." Notice of December 5, 1994, 59 FR 63591, at 63594.*

*NOTE: "No amendment other than to make the provisional application comply with the patent statute and all applicable regulations, may be made to the provisional application after the filing date of the provisional application. " 37 C.F.R. § 1.53(c).*

*NOTE: 35 U.S.C. 119(e) provides that "[i]f the day that is 12 months after the filing date of a provisional application falls on a Saturday, Sunday, or Federal Holiday within the District of Columbia, the period of pendency of the provisional application shall be extended to the next succeeding secular or business day."*

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 C.F.R. § 1.51(c)(1)(i).

1. The following comprises the information required by 37 C.F.R. § 1.51(c)(1):

2. The name(s) of the inventor(s) is/are (37 C.F.R. § 1.51(c)(1)(ii)):

*NOTE: "If the correct inventor or inventors are not named on filing, a provisional application without a cover sheet under § 1.51(c)(1), the later submission of a cover sheet under § 1.51(c)(1) during the pendency of the application will act to correct the earlier identification of inventorship." 37 C.F.R. § 1.48(f)(2).*

*NOTE: "The naming of inventors for obtaining a filing date for a provisional application is the same as for other applications. A provisional application filed with the inventors identified as 'Jones et al.' will not be accorded a filing date earlier than the date upon which the name of each inventor is supplied unless a petition with the fee set forth in § 1.17(i) is filed which sets forth the reasons the delay in supplying the names should be excused. Administrative oversight is an acceptable reason. It should be noted that for a 35 U.S.C. 111(a) application to be entitled to claim the benefit of the filing date of a provisional application the 35 U.S.C. 111(a)[,] application must have at least one inventor in common with the provisional application." Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,209.*

*The term "invention" is typically used to refer to subject matter which applicant is claiming in his/her application. Because claims are not required in a provisional application, it would not be appropriate to reference joint inventors as those who have made a contribution to the "invention" disclosed in the provisional application. If the "invention" has not been determined in the provisional application because no claims have been presented, then the name(s) of those person(s) who have made a contribution to the subject matter disclosed in the provisional application should be submitted. Section 1.45(c) states that "if multiple inventors are named in a provisional application, each named inventor must have made a contribution, individually or jointly, to the subject matter disclosed in the provisional application." All that § 1.45(c) requires is that if someone is named as an inventor, that person must have made a contribution to the subject matter disclosed in the provisional application. When applicant has determined what the invention is by the filing of the 35 U.S.C. 111(a) application, that is the time when the correct inventors must be named. The 35 U.S.C. 111(a) application must have an inventor in common with the provisional application in order for the 35 U.S.C. 111(a) application to be entitled to claim the benefit of the provisional application under 35 U.S.C. 119(e). Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,208.*

*See 37 C.F.R. § 1.53.*

| | GIVEN NAME | MIDDLE INITIAL OR NAME | FAMILY (OR LAST) NAME |
|---|---|---|---|
| 1. | KRISTIAN | KNAK | NYGAARD |
| 2. | SØREN | | THOMSEN |
| 3. | SØREN | | SKOV |
| 4. | PETER | | PRAEST |

3. Residence address(es) of the inventor(s), as numbered above (37 C.F.R. § 1.51(c)(1)(iii)):

1. FREDERIKSVEJ 42, ST. TV.; 2000 FREDERIKSBERG; DENMARK

2. RYESGADE 87, 4. TV.; 2100 KØBENHAVN Ø; DENMARK

3. ENGLANDSVEJ 16, 4. TH.; 2300 KØBENHAVN S; DENMARK

4. FRANKRIGSGADE 31, 4. TH.; 2300 KØBENHAVN S; DENMARK

4. The title of the invention is (37 C.F.R. § 1.51(c)(1)(iv)):

SYSTEM FOR DOWNLOADING TELEVISION INFORMATION TO EXTERNAL DEVICES AND MEDIA

5. The name, registration, customer and telephone numbers of the practitioner *(if applicable)* are (37 C.F.R. § 1.51(c)(1)(v)):

Name of practitioner: WILLIAM R. EVANS

Reg. No. 25,858 Tel. (212) 708-1930

Customer No. 00140

*(complete the following, if applicable)*

[ ] A power of attorney accompanies this cover sheet.

6. The docket number used to identify this application is (37 C.F.R. § 1.51(c)(1)(vi)):

Docket No. U 015067-7

7. The correspondence address for this application is (37 C.F.R. § 1.51(c)(1)(vii)):

Ladas & Parry, 26 West 61st Street, New York, NY 10023

8. Statement as to whether invention was made by an agency of the U.S. Government or under contract with an agency of the U.S. Government. (37 C.F.R. § 1.51(c)(1)(viii)).

This invention was made by an agency of the United States Government, or under contract with an agency of the United States Government.

[X] No
[ ] Yes

The name of the U.S. Government agency and the Government contract number are:

_____

_____

9. Identification of documents accompanying this cover sheet:

A. Documents required by 37 C.F.R. §§ 1.51(c)(2)-(3):

28 (2 pp 25)

Specification: No. of pages ~~27~~
Drawings: No. of sheets 11

B. Additional documents:

[X] Claims: No. of sheets 1

*Note: See 37 C.F.R. § 1.51.*

[ ] Power of attorney
[ ] Small Entity Statement or Written Assertion
[ ] Assignment
[ ] English language translation of non-English provisional application and Statement of Accuracy thereof

*NOTE: A provisional application which is filed in a language other than English, does not have to have an English language translation. See 37 C.F.R. § 1.52(d)(2). However, if the provisional application is not in the English* language and will later serve as a benefit of its filing date for a nonprovisional application, other than a de patent, or for an international application designating the U.S., then an English language translation must filed in the provisional application or the later filed nonprovisional application. See § 1.78(a)(5)(iv).

10. Fee

The filing fee for this provisional application, as set in 37 C.F.R. § 1.16(k), is $160.00, for other than a small entity, and $80.00, for a small entity.

[X] Applicant is not a small entity.
[ ] Applicant is a small entity.

*NOTE: "A . . . statement i compliance with existing § 1.27 is required to be filed in each provisional application in which it is desired to pay reduced fees." Notice of April 14, 1995, 60 Fed. Reg. 20, 195, at 20,197.*

11. Small entity assertion

[ ] A Statement or Written Assertion that this is a filing by a small entity under 37 C.F.R. § 1.27(c)(1) is attached.

[ ] Small entity status is asserted for this application by payment of the small entity filing fee under § 1.16(k). 37 C.F.R. § 1.27(c)(3).

*WARNING: "Small entity status must not be established unless the person or persons signing the . . . statement can unequivocally make the required self-certification." M.P.E.P. Section 509.03, 6th ed., rev. 2, July 1996 (emphasis added).*

12. Fee payment

[X] Fee payment in the amount of $ 160.00 is being made at this time.

[ ] No filing fee is to be paid at this time. (This and the surcharge required by 37 C.F.R. § 1.16(l) can be paid subsequently.)



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13. Method of fee payment

[X] Check in the amount of $ 160.00.
[ ] Charge Account No. 12-0425, in the amount of $ _____.
A duplicate of this Cover Sheet is attached.

Please charge Account No. 12-0425 for any deficiency in the fee paid.

Date: _____

_____
Signature of submitter

Tel.: ( )

OR

Date: March 10, 2004

_____
Signature of practitioner

Reg. No.: 25,858

WILLIAM R. EVANS
*(type or print name of practitioner)*

Tel.: (212)708-1930

LADAS & PARRY
P.O. Address

Customer No.: 00140

26 WEST 61ST STREET
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# SYSTEM FOR DOWNLOADING TELEVISION INFORMATION TO EXTERNAL DEVICES AND MEDIA

## FIELD OF THE INVENTION

The present invention relates to interactive television and more particularly to interactive television services that enable downloading of television information to external devices and media.

## BACKGROUND OF THE INVENTION

Downloading via the Internet tunes for use as telephone rings for cellular telephones is well known in the art. Also known in the art is downloading images to cellular telephones via the Internet.

Some aspects of technologies and related art that may be useful in understanding the present invention are described in the following publications:

US Patent 5,606,365 to Maurinus et al, which describes an interactive camera for network processing of captured images;

Published US Patent application 2003/0167469 of Hardingham et al, which describes a method and system of offering for sale images related to a television program via interactive television; and

Published PCT patent application WO 99/59339, which describes an interactive television system for selectively retrieving video images or teletext pages from a remote transmitter;

Published US Patent application 2003/0093786 of Amsellem, which describes an interactive television method and device;

Published PCT patent application WO 03/055217, which describes an interactive television commerce system that includes a video broadcast distribution network having multiple in-band and out-band channels;

Published PCT patent application WO 02/082796, which describes a video image display system that is used for interactive television, videoconferencing and telemonitoring; and

Published US Patent application 2003/0011636 of Feroglia et al, which describes a method for magnifying content.

The disclosures of all references mentioned above and throughout the specification, as well as the disclosures of all references mentioned in those references, are hereby incorporated herein by reference.

## SUMMARY OF THE INVENTION

The present invention seeks to provide a system and method for enabling individual determination and selection of information, such as images and rings, to be downloaded from television, and for downloading the individually determined information to external devices and media. Today, individual choice of rings and images is typically not available because users cannot choose rings and images that were not previously determined and placed in databases by providers of the rings and images. Enabling individual determination and selection of rings and images to be downloaded makes it possible for users to have an individual "touch" with regards to usage of the external devices and media and is therefore considered desirable.

The external devices and media may include, for example, mobile (or cellular) telephones and other personal computing, entertaining and communicating devices. By way of example, the description below refers to downloading rings and images from an entertainment television channel. The rings and the images are comprised in audio/video (A/V) sections. However, it is appreciated that the present invention is not limited to rings and images or to a specific channel or content provider, and a service for downloading rings and images from television (a "snapshot service") may 'fit' many broadcasters (assuming they have the right type of content).

The present invention also seeks to enable quick and simple use of the service because users are expected to act on impulse.

The present invention further seeks to leave a target audience as much as possible in control of a final image and/or ring downloaded to their external devices.

The terms "tune", "ring" "polyphonic ring", and "ring tone" in singular or plural are interchangeably used throughout the present specification and claims to refer to music or sounds that may be used as a telephone ring or as background sounds to an application.

Preferably, the service is an integral part of watching television, that is, a user may decide to download tunes and images while viewing, for example, the

latest tunes presented in glamorous music videos on the entertainment television channel.

Taking advantage of interactive capabilities of interactive television (ITV), viewers may be offered a high degree of freedom. Preferably, the viewers are offered the opportunity to take a 'snapshot' of what *they* believe is the most "cool" background image for their mobile telephone whether it is an image of their favorite pop star, a cartoon image or any other preferred image, including, inter alia, a background environment such as a landscape view. When a viewer presses, for example, a key on a remote control, a flashy blitz effect preferably appears on a television screen and a few minutes later the viewer preferably receives the background image on his or her mobile phone.

It is appreciated that allowing individual creation and flashing of an image may be attractive to many viewers that are also users of cellular telephones and may enable them to add individual "statements" and/or "touch" to ways in which the users use their cellular telephones. Such individual statements and touch cannot be achieved by letting the viewers select between a limited range of background images of which they have no control.

Similar freedom is preferably offered in defining polyphonic ring tones (rings). The viewers are preferably enabled to 'record' tunes of their liking and preference, for example by pressing 'start' and 'stop' at any point during a music video.

A snapshot service may also be offered to viewers of non-interactive television, such as viewers of conventional analog terrestrial television. Such a snapshot service is referred to throughout the present specification and claims as an "analog snapshot service". The analog snapshot service makes use of a telephone and does not require a set-top box (STB) as in a snapshot service that uses ITV. The analog snapshot service is therefore suitable for larger audiences and larger varieties of markets than a snapshot service that uses ITV.

In the analog snapshot service, a viewer that watches television may press a telephone key at an instant when a desired image appears on television. A voice response system preferably registers the exact time the viewer pressed the key,

and based on such a registered time, a video frame including the desired image may be determined and transmitted to a mobile telephone of the viewer.

There is thus provided in accordance with a preferred embodiment of the present invention a method for selecting an A/V section from an A/V program rendered on a television, the method including pointing at the A/V section substantially when the A/V section is rendered on the television, and identifying the A/V section based on when the pointing was carried out with respect to rendering progress of the A/V program on the television.

Further in accordance with a preferred embodiment of the present invention there is provided apparatus for selecting an A/V section from an A/V program rendered on a television, the apparatus including a pointer enabling pointing at the A/V section substantially when the A/V section is rendered on the television, and a processor identifying the A/V section based on when pointing of the A/V section was carried out with respect to rendering progress of the A/V program on the television.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Figs. 1 - 3 are simplified pictorial illustrations depicting television screens displayed to a user during offering and using a snapshot service;

Figs. 4 and 5 are simplified pictorial illustrations depicting display screens displayed to a user during editing of a downloaded background image;

Fig. 6 is a simplified pictorial illustration depicting a television screen displayed to a user during editing of a polyphonic ring;

Figs. 7A and 7B together constitute a simplified block diagram illustration of a system for providing a snapshot service for a case where television information from which snapshots are to be taken comprises television information in an MPEG digital format;

Figs. 7C and 7D together constitute a simplified block diagram illustration of a system for providing a snapshot service for a case where television information from which snapshots are to be taken comprises analog television information;

Fig. 8 is a simplified block diagram illustration of a system for providing a snapshot service in which there are various latencies;

Fig. 9A is a simplified block diagram illustration of a frame recorder indicated "iCapture" in the system of Figs. 7A and 7B; and

Fig. 9B is a simplified block diagram illustration of a frame recorder indicated "iCapture" in the system of Figs. 7C and 7D.

## DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

### 1 Concept

A snapshot service enables a user to individually determine and select information to be downloaded from a television, such as images and rings, and to download the images and rings to an external device or external media. The external device may include, for example, any one of the following: a mobile (cellular) telephone; a computing device; an entertainment device; and a communication device. The external media may include media in an external device or media attached to an external device, such as a memory stick that may be associated with an external device comprising, for example, a computing device such as a personal computer (PC). For simplicity, the description below refers to a mobile telephone as the external device to which the information is downloaded from the television, but it is appreciated that the present invention is not limited to mobile telephones as external devices.

It is appreciated that individual determination and selection of the information to be downloaded from the television allows the user to create an individual statement – both in terms of visuals and audio. Preferably, individual determination and selection of the information to be downloaded from the television is enabled by allowing the user to take 'snapshots' of background images and polyphonic ring tones by simple key pressing, for example, on a remote control. The background images and the polyphonic ring tones are comprised in audio/video (A/V) sections and the user may select an A/V section from an A/V program rendered on the television by pointing at the A/V section substantially when the A/V section is rendered on the television. The A/V section is then identified based on when the pointing was carried out with respect to rendering progress of the A/V program on the television.

The snapshots may be transmitted to mobile telephones. Alternatively, the snapshots may be transmitted to media other than mobile telephones (as part of the very same transmission mechanism) and used respectively, for example, as wallpaper and start-up sounds for PCs.

In an analog snapshot service, users of non-interactive television, such as analog broadcast television, may use telephones to make individual determination and selection of information to be downloaded from television. A key press on a telephone keypad at a time a desired image is displayed is preferably recorded by a voice response system and used to determine a video frame that includes the desired image. The desired image may then be transmitted to mobile telephones or to media other than mobile telephones for use, for example, as wallpaper and start-up sounds.

**1.1 Background Images**

Referring, for example, to a snapshot service that uses ITV, an example of a screen on a television offering a user an opportunity to download a background image is described below with reference to Fig. 1. Being a fan of, for example, a singer, the user may want to 'snap' the picture of the singer as she performs live, for example on an entertainment television channel, for use as a background image on his/her mobile telephone. Such an opportunity is preferably indicated/promoted, for example, by displaying an icon and a remote control reference on the television screen as shown in Fig. 1.

Preferably, when the user presses a dedicated key on a remote control, e.g., the yellow key, the key press is translated to an instruction to instantly take a 'snap' of the singer picture. Some flashy visual blitz effect as illustrated in Fig. 2 may preferably indicate a picture being currently taken – only visible for a very short time equivalent to a couple of frames and preferably starting from the picture frame being snapped.

It is appreciated that although frame accuracy cannot typically be guaranteed, it may come very close. Displaying the flashy effect generally resembles flash usage in a conventional film camera. Such an effect may be used to train the user to capture the exact 'moment' as is the case in conventional film cameras. Since many users have learned to operate film cameras in a satisfactory way, it is anticipated that taking a snapshot may also be learned to provide satisfactory results.

As soon as a picture has been taken (snapped), a message is preferably prompted on the television screen as shown in Fig. 3. The message preferably invites the user to enter a number of his/her mobile telephone where the background image is to be downloaded.

Preferably, a number of validation and confirmation pop-up screens are used before submitting, via a return path provided by a modem (not shown) of a set-top box (STB) (not shown) associated with the television, a request to download the snapped picture. The pop-up screens may preferably form part of a procedure for order confirmation and monetary transaction for payment for the service.

After the user enters the number of his/her mobile telephone and confirms his/her request and payment, the request is preferably transmitted via the modem to a backend installation of the service, such as a server. The server preferably transmits a desired background image resulting from the snapped picture to the specified mobile telephone embedded in at least one of the following: an MMS (Multimedia Messaging Service) message; a WAP (Wireless Application Protocol) push massage; and a JAVA™ application. If the background image is embedded in a JAVA application, simple editing of the background image is supported on the mobile telephone. Specifically, the user can crop an area of the background image as shown in Fig. 4.

It is appreciated that the user may keep the background image as received from the server, or edit the background image in which case the user may go for, as depicted in Fig. 4, a different rendering of the singer ('CROP'). If the user decides to edit the background image, the user may preferably select 'CROP' to bring forward a proportional focus area that can be moved around the display screen by pressing conventional arrow keys. Also, by pressing another set of keys, such as '+' and '-' if available, it may be possible to reduce or enlarge the focus area as shown in Fig. 5.

If the background image is accepted as is, no further communication is required. However, in a case where the background image is edited, another transaction is needed. Preferably, editing of the background image returns a set of

coordinates to the server, which will then send a new background image as specified by the user.

If the background image is delivered in an MMS message or a WAP push message, editing is not supported on the mobile telephone. Instead, editing can be handled on the STB. In such a case, the background image selected by the user is *returned* to the STB via the modem as a bitmap or MPEG still image using the very same return path, and the user may edit the bitmap or MPEG still image when displayed by the STB on the television screen. When the user terminates editing of the background image, coordinates resulting from the editing are preferably communicated from the STB to the server via the return path, and the server processes the background image and the coordinates to produce an edited background image which is then sent to the mobile telephone.

The analog snapshot service differs from the snapshot service that uses ITV in a way snapshots are ordered, determined and taken. An analog snapshot session is typically initiated by the user using a mobile telephone to dial a telephone number which is provided by a provider of the analog snapshot service and is displayed on the screen of the television when the analog snapshot service is made available. A telephone call thus initiated by the user is preferably responded by a voice response system. After, typically, an introduction and an explanation of the service, and input, by the user, of required information typically including the user's mobile telephone number, the voice response system is ready to accept an image selection from the user. The voice response system then preferably prompts the user to press a key on a telephone keypad when the user notes a desired image on the screen of the television.

It is appreciated that the required information may also include monetary information or information indicating an agreement by the user to pay for the service. In such a case, the monetary information or the information indicating an agreement by the user to pay for the service may be validated by the voice response system or by a validation system (not shown) associated with the voice response system as part of a monetary transaction as is well known in the art.

Typically, the user remains on-line and waits until the desired image is displayed on the television screen. The user may then press the key on the telephone keypad and the voice response system preferably records a time when the key press was made. The time when the key press was made is then matched to the desired image, and the desired image is preferably transmitted by the server to the user's mobile telephone as in the case of the snapshot service that uses ITV. The user may then maintain the image or edit the image as in the case of the snapshot service that uses ITV. If the user edits the image, the user is typically required to initiate a new session to obtain another image that corresponds to a required editing.

**1.2 Polyphonic Ring Tones**

Preferably, recording, downloading and editing of polyphonic ring tones works similarly from a conceptual point of view. Thus, it is possible to use almost the same conceptual frameworks as described above for 'snapshots' of sound for the snapshot service that uses ITV and for the analog snapshot service, respectively.

Referring now back to Fig. 1, the user is preferably able to 'start' and 'stop' recording of, for example, at least a part of a song performed by the singer live on the entertainment television channel for use as a polyphonic ring tone on his/her mobile telephone. The recording may be started and stopped by the user pressing another dedicated key on the remote control, e.g., the blue key. One press on the blue key may be used to start the recording, and another press on the blue key may be used to stop recording. An incrementing bar may preferably be displayed while recording, making sure that the user has an easy-to-read indication of the maximum length of the recording. At the same time, it is a clear indication that the recording has started. A timeout period may preferably be determined so that if the user does not press the key to stop the recording, the recording will be terminated automatically after the timeout period.

Similar to background images, the polyphonic ring tone may preferably be transmitted to the mobile telephone embedded in a JAVA

application, allowing for simple editing by adjusting start and end points with arrow keys of the mobile telephone as shown in Fig. 6. It is appreciated that if the mobile telephone has the capability of implementing editing changes to the polyphonic ring tone, no further communication is required once the editing is finished. However, if the mobile telephone does not have the capability of implementing the editing changes to the polyphonic ring tone, further communication with the server is required to notify the server of the editing changes required in which case the server preferably actually implements the editing changes and transmits an edited version of the polyphonic ring tone back to the mobile telephone.

In the analog snapshot service, the recording may be started and stopped by the user pressing different keys on the telephone keypad at respective times.

**1.3 Other Downloads**

Depending on mobile telephone capabilities, it may be possible to download more than one video frame, such as an entire video clip or commercial. In such a case, the user may download video snapshots by using the 'start' and 'stop' options for starting and ending recording respectively as in the case of ring tone recording. In general, the present invention enables the concept of 'An item that can be 'snapped' can be downloaded' for both the snapshot service that uses ITV and the analog snapshot service.

**1.4 Other Media**

The present invention also preferably enables distribution of image or sound snapshots to media other than a mobile telephone. For example, the user may send a snapshot in an e-mail message to his/her own e-mail account or to a friend. The snapshot may then be used as a desktop image or a start-up sound respectively. It is also possible to set-up related websites where users can submit their snapshots for others to check out (but not copy), participate in competitions, etc.

### 1.5 Branding

The snapshots offer an opportunity to increase brand loyalty of viewers/users because like pictures in an album users may want to show downloaded snapshots to other people. To further increase brand loyalty, any snapshot delivered by the service may preferably be 'stamped' with a clear rendering of a broadcaster's logo, making sure that nobody has any doubts on where to go for such a snapshot.

### 1.6 Payments for the Service

As mentioned above, a monetary transaction may be carried out for payment for the service. Payments may be in the form of micro-payments as is well known in the art. It is appreciated that for promotion purposes some snapshot downloads may be for free whereas others may be downloaded for a price. It is further appreciated that snapshots from different television programs may be differently priced.

In the analog snapshot service, the user may remain on-line for relatively long time periods until the desired image is displayed on the television screen. Thus, if the user is also billed for on-line calls to the voice response system, such billing may increase the price of a snapshot download.

## 2 Owners' Rights of Downloaded Snapshots

Broadcasters that are owners of television information that is subject to downloading as snapshots may charge for taking snapshots of their own content. For broadcast material whose rights are not owned by the broadcasters, agreements may be reached in which either the rights for offering the material within the service are acquired by the broadcasters, or revenues from downloading the snapshots are split between owners of the rights and the broadcasters. Each program offered in the service may preferably include a code identifying a rights owner that is entitled to at least a portion of payments made by users downloading snapshots from the program.

It is appreciated that if a program is not offered in the service for downloading snapshots, the program may be assigned a metadata code or flag that prevents taking and downloading snapshots thus "turning off" the service for the program. Such 'censoring' of the service is typically done by conventional broadcast scheduling systems (not shown).

The term "metadata" is used throughout the specification and claims to include information descriptive of or otherwise referring to an interactive content stream. The information referring to the interactive content stream may include, for example, pointers, tags, flags and indexing information. At least part of the information referring to the interactive content stream may be used to enable or disable interactive operations depending, for example, on values assigned to the tags or flags. In a case where the interactive content stream is associated with at least one television program, the pointers, tags, flags and indexing information may point to and index segments of the at least one television program and portions of the interactive content stream. It is appreciated that the contents of the metadata may preferably pertain to either a plurality of users or an individual user. The metadata may be used to enable operations on at least one television program, if associated with the interactive content stream, and/or on interactive content in the interactive content stream.

The metadata may also be useful in billing users for downloading snapshots of background images and polyphonic ring tones because the metadata identifies a television program from which the snapshots have been downloaded. Identification of the program enables the service to credit a rights owner as mentioned above. It is appreciated that the metadata may also include indications, for example through tags, of different pricing for snapshots taken from different television programs. Preferably, the different pricing is presented to the users before submitting requests to download snapshots.

**3 Technology**

A system for downloading television information individually determined and selected by a user to an external device is described below with

reference to Figs. 7A and 7B for a case where the television information comprises television information in an MPEG digital format. A corresponding system for a case where the television information comprises analog television information is described below with reference to Figs. 7C and 7D.

### 3.1 Storing Frames

Fig. 7A depicts elements at a headend that broadcasts television programs in an MPEG format. To store video frames, a frame recorder indicated "iCapture" is preferably utilised at the headend. Basically, iCapture captures a live video stream of a television program, decodes the video stream into frames and stores each of the frames in a frame database that is preferably sufficiently large to hold a significant history of frames. Preferably, iCapture attaches to each frame a frame identifier that uniquely identifies the frame when retrieving frames. A more detailed description of iCapture is provided below in Section 3.7.

It is appreciated that a required storage capacity of the frame database may be reduced if iCapture is enabled to store MPEG sequences in an MPEG format instead of discrete frames. An MPEG sequence is the smallest piece of the MPEG stream that can be decoded without any additional information. Storage of MPEG sequences is generally more economical than storage of discrete frames. Additionally, extraction of images from an MPEG sequence is a fast and simple operation, and decoding of the MPEG sequence is relatively simple.

Fig. 7C depicts elements at a headend that broadcasts television programs in an analog format. The headend depicted in Fig. 7C also includes an iCapture element, but the iCapture of Fig. 7C receives streamed video frames in an analog format as input and outputs, for storage in the frame database, discrete frames in an image format that offers a good quality, such as, for example, the PNG format.

### 3.2 Retrieving Frames

A conventional application server is preferably responsible for retrieving frames. The application server used in the system of Figs. 7A and 7B

may be similar in structure and function to the application server used in the system of Figs. 7C and 7D. The application server is preferably connected to the frame database and it processes requests from STBs and mobile telephones and generates replies to the mobile telephones. The requests preferably include frame identifiers and the replies preferably include the corresponding frames. It is appreciated that the application server preferably supports and serves requests from a plurality of users simultaneously.

The replies are preferably transmitted through an MMS gateway. The MMS gateway may also receive requests for additional frames from the mobile telephones and transmit them to the application server.

### 3.3 Unique Identification of Frames

When the user uses the service and a frame is selected the server must preferably be notified which frame was selected. Preferably, a unique identification (UID) of the frames is constructed in order to enable notification of selected frames to the server.

#### 3.3.1 Identification of Frames in the Snapshot Service that Uses ITV

##### 3.3.1.1 First Identification Mode

The UID preferably includes three components: a time code; a frame counter; and a discontinuation counter.

*The Time Code*

The time code is an integral part of a conventional MPEG video stream. The time code is attached approximately every 1/2 second.

*The Frame Counter*

The frame counter specifies how many frames have passed since the latest change in the time code was detected. This counter is implemented by monitoring the time codes in an STB application. The latest received time code is inspected once every 1/25 second. If a new time code is found, it is stored and the frame counter is set to zero. If the same time code is received again, the frame

counter is incremented. A similar computation of the frame counter is performed by iCapture, so that a time code and a frame counter together identify each frame.

The frame counter is based on an STB's clock. There is a risk that the STB's clock might drift slightly so that a frame cannot be identified with 100 percent accuracy. However, latency in the user's reaction time is expected to be much higher than such a drift and therefore the STB's clock drift is typically acceptable.

*The Discontinuation Counter*

The combination of time code and frame counter is, however, not enough to make a complete unique identification of a frame. The problem is that the time code may have discontinuities. Discontinuities may be caused by changing or rebooting of MPEG encoding equipment at the headend and may also occur if pieces of pre-encoded MPEG video are comprised in broadcasted video material. The problem with discontinuities is that two different frames may have the same time code. To distinguish between two different frames with the same time code, discontinuities may preferably be counted in both iCapture and the STB application. In other words, a discontinuation counter is preferably added to the UID. The discontinuation counter is incremented each time the time code in the broadcast video material is not continuous. To make it possible for the user to change channels whenever he/she desires, iCapture preferably broadcasts a current discontinuation counter value on a separate data stream encoded, for example and without limiting the description, as a document in bDOM which is commercially available from NDS Ltd., One London Road, Staines, Middlesex TW18 4EX, United Kingdom.

After a period of monitoring the discontinuation counter and the time codes being broadcast, the STB application is typically fully synchronised with the server and the unique identification is preferably determined.

### 3.3.1.2 Second Identification Mode

The second identification mode can be used in cases where the first identification mode is not viable due to limitations in headend equipment or STB middleware.

The second identification mode is particularly useful in a case where the snapshot service uses ITV in which it is possible to broadcast information with a constant and fixed broadcast latency. STBs useful for such ITV may include any appropriate STBs such as, for example and without limiting the generality of the invention, STBs of a Media Highway™ system which is commercially available from NDS Limited, One London Road, Staines, Middlesex, TW18 4EX, United Kingdom.

In such a case, a unique number may be broadcast from iCapture to an STB, one specific example of which is a Media Highway™ STB. Since the broadcast latency is constant, the STB is able to compute excatly when the number was sent from iCapture, and it can therefore compute a unique identification based on the latest received number and the time that has passed since the latest received number was received. Identical computations can also be performed by iCapture, and it is therefore possible to compare results of such computations for correct identification of a desired background image.

### 3.3.2 Identification of Frames in the Analog Snapshot Service

In the analog snapshot service, a determination of a frame that includes a desired image is based on an exact determination, as recorded in the voice response system, of the time when the user has pressed the key on the telephone keypad while viewing a broadcast program.

Preferably, iCapture tags each frame with an indication of the exact time the frame was received in a video transmission. In an analog video transmission frame tagging is based on an external clock that is used to identify excatly when iCapture has received the frame. Once the frames are tagged, iCapture may operate as in the case of the snapshot service that uses ITV to respond to a request for

retrieving a frame that is provided by the voice response system based on the time when the user has pressed the key on the telephone keypad.

### 3.4 User Interface

#### 3.4.1 User Interface in the Snapshot Service that Uses ITV

In the snapshot service that uses ITV the user interfaces with the STB through the remote control and menu screens. The menu screens enable the user to select the service, input a target telephone number, and to select an A/V section from an A/V program rendered on television by pointing, for example through pressing a key on the remote control, at the A/V section substantially when the A/V section is rendered on the television. The A/V section may, for example, include an image or a polyphonic ring tone.

After selection of a desired A/V section for downloading, the user may also use menu screens to approve the selection and a payment, and to allow the selection to be transmitted to the headend. The A/V section is identified by a processor (not shown) at the headend based on when pointing of the A/V section was carried out with respect to rendering progress of the A/V program on the television.

#### 3.4.2 User Interface in the Analog Snapshot Service

In the analog snapshot service, the user interface is provided by the voice response system. The voice response system may preferably be implemented in any appropriate combination of hardware and software.

Preferably, the user dials a telephone number of the voice response system which is provided by a provider of the analog snapshot service. The telephone number of the voice response system may preferably be displayed on the screen of the television when the analog snapshot service is made available.

The voice response system preferably responds to a telephone call initiated by the user by presenting the service and requesting the user to enter user input information that is necessary for the service. The user input information may,

for example, include the following: the user's mobile telephone number; a source of a video signal received by the user; the user's mobile telephone model; an indication indicating a mobile operator that provides cellular services to the user's mobile telephone; and a target mobile telephone number.

The source of the video signal may typically be a cable source or a satellite transmission source. Knowledge of the source is important in order to determine latencies as described below.

In a case where the user's mobile telephone model may be autodetected, a requirement to enter the information regarding the mobile telephone model may be optional.

The target mobile telephone number is required only in a case where the user intends to send a snapshot to a mobile telephone other than his/hers. Otherwise, the user's mobile telephone number is used as a target for the snapshot.

It is appreciated that much of the user input information mentioned above may be provided once and stored at the voice response system for future sessions of snapshot downloading.

After accepting and processing the user input information, the voice response system may notify the user that the system is ready to accept a selection of a desired image for downloading as a snapshot. The voice response system then preferably invites the user to press a key on a keypad of the mobile telephone when the user notes a desired image on the screen of the television.

Preferably, when the voice response system detects that the user has pressed the key on the mobile telephone keypad, the voice response system generates a request with the exact time the key was pressed. Based on such a time determination, it is possible to locate the frame displayed in the broadcast program when the key was pressed. However, there are two requirements that must be met in order to enable selection of the correct frame within a negligible range of inaccuracy. The first requirement is that clocks of all sub-systems that are involved in the determination of the exact time must be synchronized. The second requirement is that possible latencies in the sub-systems must be determined and taken into account. The first and the second requirements are discussed below.

#### 3.4.2.1 Clock Synchronization and Sub-systems Latencies

##### 3.4.2.1.1 Clock Synchronization

If the clocks of all the sub-systems that are involved in the determination of the time when the user has pressed the key are not synchronized, calculation of the time may be incorrect and the user may, in the end, get an incorrect frame. Therefore, a mechanism as is well known in the art which ensures that the clocks are synchronized may preferably be employed to synchronize the sub-systems clocks. An example of such a mechanism is the Network Time Protocol (NTP) which is described at the World Wide Web site www.ntp.org.

##### 3.4.2.1.2 Sub-systems Latencies

Latencies in the sub-systems that are involved in the determination of the time when the user has pressed the key may also cause incorrect calculation of the time which in its turn may result in the user being provided an incorrect frame. Therefore, it is important to determine the latencies in advance and to take the latencies into account when determining the time when the user has pressed the key.

Most of the sub-systems have latencies that are expected to be fairly constant over time, and constant for most users. Any remaining variance in the latencies is expected to be small and without significant influence on frame supply end results.

The following sub-systems are expected to contribute latencies: telephone connections and the voice response system; video broadcast systems; and iCapture.

Latencies contributed by the telephone connections and the voice response system are expected to be insignificant because telephone systems and voice response systems are designed *a priori* to successfully handle voice interaction and selections through key presses.

If the voice response system involves a network connection between a hardware that handles telephone calls and a computer that is able to compute the time when the user has pressed the key, the network connection may contribute a network latency. If the network latency is fairly constant, the network latency may

be measured and subtracted. Networks, however, have a tendency to have a high variance in latencies if and only if traffic capacity of traffic passing in the networks is close to the maximal capacity. Thus, in order to avoid a high variance in latency, a network used for providing a snapshot service must have a traffic capacity larger than what is normally needed. If the network used for providing a snapshot service is to be shared, it is important to ensure exclusive reservation of ample capacity of the network for the snapshot service.

Another latency that may be associated with the voice response system is related to whether the voice response system records a key press when the key is pressed down or when the key is released. In such a case, it is preferred, in terms of latency, to use a voice response system that records the key press when the key is pressed down.

Latencies of video broadcast systems depend on how video signals are broadcast to users and to iCapture which records the video signals. The video signals may, for example, be received at iCapture at a different time than at a user television. If iCapture receives the video signals from a source other than a source that broadcasts the video signals to the user television, it is possible to compute a resulting latency, or to find the resulting latency by performing user experiments.

If users receive the video signals from different sources, such as from a cable source and a satellite transmission, significant latencies in video reception may occur. In such a case, latencies of cable transmission and satellite transmission may be measured in advance and taken into account. It is appreciated that the users will then preferably be required to input to the voice response system information regarding sources of video signals received at their televisions as mentioned above.

Latency in iCapture between a time when the video signals are received and a time when a reception time of a desired frame is computed may also influence accuracy of the snapshot service. Depending on the structure and operation of iCaputre, such latency may be insignificant or measured in advance and taken into account.

Fig. 8 shows a simplified block diagram illustration of a system for providing a snapshot service in which there are various latencies that may be taken into account as described above.

### 3.5 Request to Server

When the user snapshots an image the UID must be transmitted to the server, which is responsible for constructing the background image and sending it to the mobile telephone.

In the snapshot service that uses ITV the UID may be transmitted in two different ways. In the first way, the UID may be transmitted in a return-path via the modem of the STB, for example together with the specified telephone number for which the background image or polyphonic ring tone is intended. Transmission via the modem does not typically require intervention by the user. However, in a case where, for example, the return-path via the modem has low penetration or communication latency is high, transmission via the modem may not be practical and another way to transmit the UID is required.

In the second way, the UID is preferably displayed on the television screen and the user is requested to send a text message, for example an SMS message including the UID to the server. The server may then return the correct background image. The disadvantage of using the second way is that the user must construct the text message manually with the risk of errors being introduced as a result of human errors. It is appreciated that the two ways may be combined so that by default the modem is used, but if an error occurs or the modem has not been connected, the user is presented with a message on the television screen requesting him/her to send a text message instead.

In the analog snapshot service there is no need for the user to actually transmit the UID to the server because the voice response system transmits the UID to the server.

### 3.6 Mobile Phone Application

As mentioned above, a JAVA application may be sent along with the background image allowing the user to edit the downloaded snapshot. Preferably, the JAVA application may support requests for previous or following images to compensate for the slight risk of the user getting a different frame than what he/she really wanted, for example due to mistiming key presses on the remote control or the mobile telephone keypad.

### 3.7 iCapture

iCapture is preferably responsible for constructing a series of pictures based on an input of streaming video. The pictures must correspond to each frame in the video, so that it is possible to find a picture for each frame. Preferably, iCapture determines, for each frame in the video, whether the frame should be accessible to a snapshot service based, for example, on whether the frame belongs to a portion of the video that is subject to an owner's rights and there is an agreement with the owner regarding the snapshot service.

Preferably, iCapture is also responsible for associating a UID to each frame, allowing searching and locating a required picture based on the UID. iCapture is further responsible for receiving and processing metadata from a broadcaster and dispatching the metadata to other components in the service.

The architecture of iCapture is depicted in Fig. 9A for a case in which iCapture deals with MPEG digital video, and in Fig. 9B for a case in which iCapture deals with analog video. It is however appreciated that a combined architecture for iCapture (not shown) may alternatively be used for dealing with both digital video and analog video.

Referring to Fig. 9A, an input streaming MPEG video is preferably inputted to iCapture in a clear form. If the MPEG video was originally encrypted at the headend, a decrypter (not shown) at the headend preferably decrypts the encrypted MPEG video prior to providing it to iCapture so that iCapture ultimately receives decrypted streaming MPEG video.

iCapture preferably includes the following elements: an MPEG decoder; a UID control unit; a metadata control unit; and a database interface that interfaces to the frame database.

The MPEG decoder is preferably responsible for decoding the streaming MPEG video and for producing one output with the time code embedded in the frames and one with still pictures. The decoder needs to ensure that exactly one picture is generated for each frame. The MPEG decoder preferably validates the MPEG video so that it is possible to disable the snapshot service for portions of the MPEG video for which the snapshot service should not be allowed. The MPEG decoder also preferably divides the MPEG video into MPEG sequences for storage in the frame database as mentioned above. The MPEG decodor preferably provides time codes to the UID control unit.

The UID control unit is responsible for synchronising the UID computed in iCapture with a UID maintained by the application running on a number of STBs. The UID control unit computes for each frame a time code of the frame and thus computes the UID. At the same time, the UID control unit monitors the time codes being broadcast to identify any discontinuities in the time codes. When a discontinuity occurs, the discontinuation counter is incremented.

The metadata control unit is preferably operative to receive metadata from other elements of the headend and to process the metadata. The metadata control unit preferably has two responsibilities:

1. A responsibility for determining whether the service should be available or not. Based on such a determination, the metadata control unit sends data to the headend (and ultimately to the set-top boxes) which controls the availability of the service.
2. A responsibility for constructing a reference between the UID and billing information, that is creating a link between the UID and a specific rights owner.

The database interface is preferably operative to insert still pictures or MPEG sequences and metadata into the frame database. The content of the



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database is preferably indexed by the UID so that it is possible to perform lookups based on UIDs.

Referring to Fig. 9B, iCapture that deals with analog video preferably includes the following elements: an analog frame decoder; an image converter; a UID control unit; a metadata control unit; and a database interface that interfaces to the frame database.

The analog frame decoder is preferably responsible for decoding inputted analog video and for preparing frames of the analog video for storage in the frame database.

The image converter preferably converts the pictures from a format outputted from the analog frame decoder into a format best suitable for storage. For example, format conversion may change the size of the pictures to fit a size acceptable on mobile telephones.

The UID control unit preferably determines the UID from frame timing information provided by the analog frame decoder.

The metadata control unit and the database interface may be similar to the metadata control unit and the database interface in iCapture that deals with digital video.

Since, in the snapshot service that uses ITV, the UID is based on the time code embedded in the MPEG video, some other way is required to compute the UID if the input for iCapture is a digital signal in a format other than MPEG. In such a case, some other type of timing information must be provided that can be used as a basis for computing the UID. Additionally, the MPEG decoder needs to be replaced by another appropriate device that is capable of decoding the format other than MPEG and generating still pictures from such a format.

It is appreciated that various features of the invention which are, for clarity, described in the contexts of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment may also be provided separately or in any suitable subcombination.

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the invention is defined by the claims which follow:

What is claimed is:

## CLAIMS

1. A method for selecting an A/V section from an A/V program rendered on a television, the method comprising:

pointing at the A/V section substantially when the A/V section is rendered on the television; and

identifying said A/V section based on when said pointing was carried out with respect to rendering progress of the A/V program on the television.

2. Apparatus for selecting an A/V section from an A/V program rendered on a television, the apparatus comprising:

a pointer enabling pointing at the A/V section substantially when the A/V section is rendered on the television; and

a processor identifying said A/V section based on when pointing of the A/V section was carried out with respect to rendering progress of the A/V program on the television.

3. Apparatus substantially as described hereinabove.

4. Apparatus substantially as shown in the drawings.

5. A method substantially as described hereinabove.

6. A method substantially as shown in the drawings.

7. A system substantially as described hereinabove.

8. A system substantially as shown in the drawings.

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Fig. 1

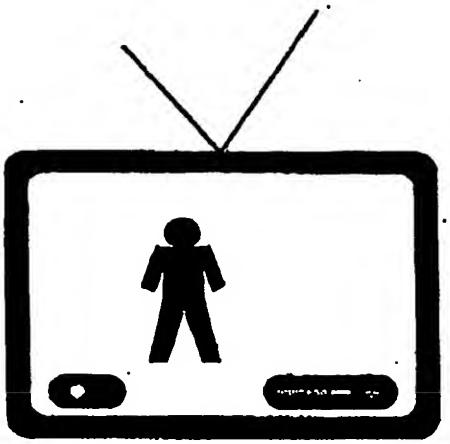


Fig. 2

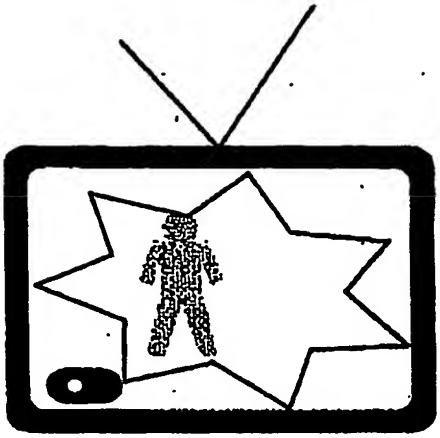


Fig. 3

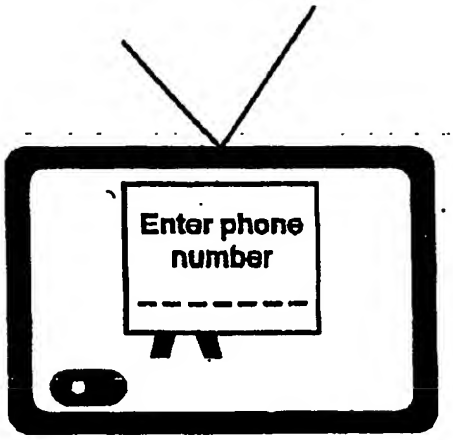
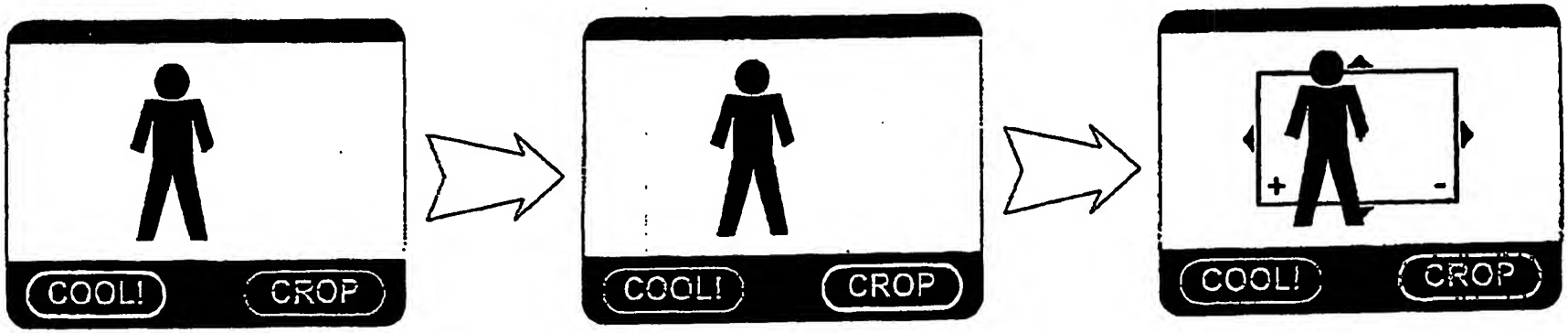


Fig. 4




1. Select 'COOL' to keep background image as is

2. To edit the background image, select 'CROP'

3. A focus area is displayed and can be controlled by arrow keys and + / - on mobile phone

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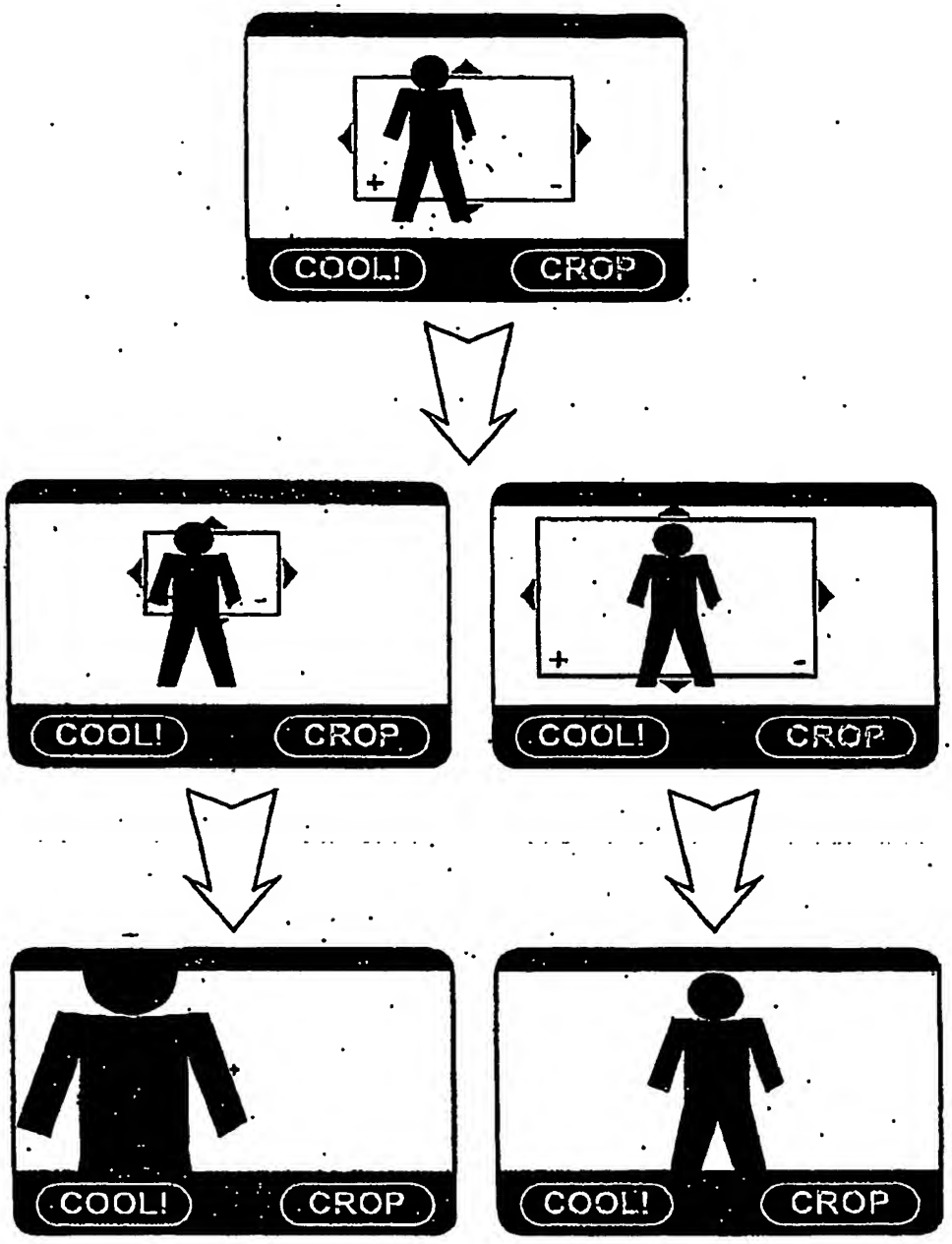
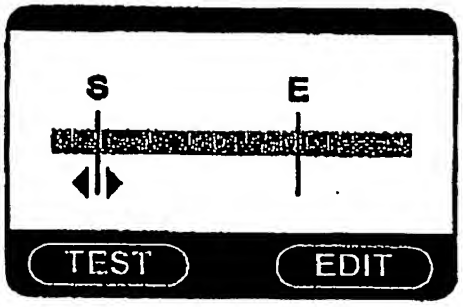
Fig. 5




1. In this case, the viewer has decided to focus (zoom in) on the upper part of the body

2. This viewer has chosen an entirely different composition

Fig. 6




Editing is handled by moving the start (S) and end (E) points with the arrow keys

Fig. 7A

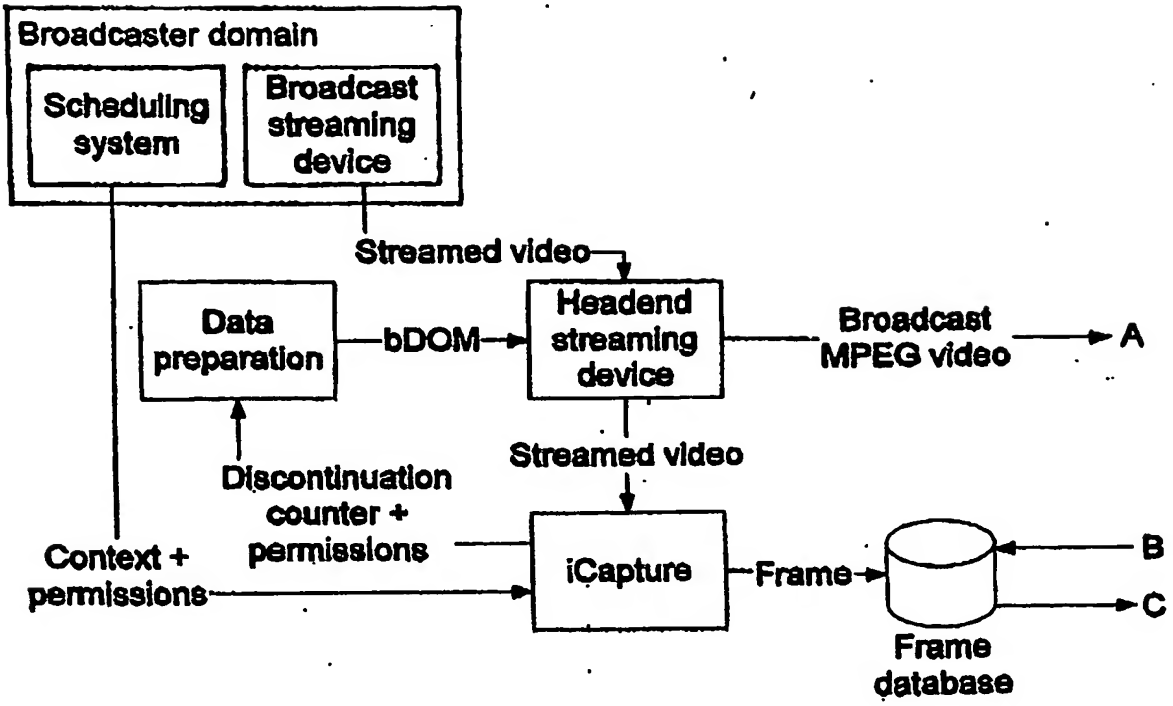

Broadcaster domain
Scheduling system
Broadcast streaming device
Streamed video
Data preparation
bDOM
Headend streaming device
Broadcast MPEG video
A
Discontinuation counter + permissions
Streamed video
Context + permissions
iCapture
Frame
B
C
Frame database

Fig. 7B

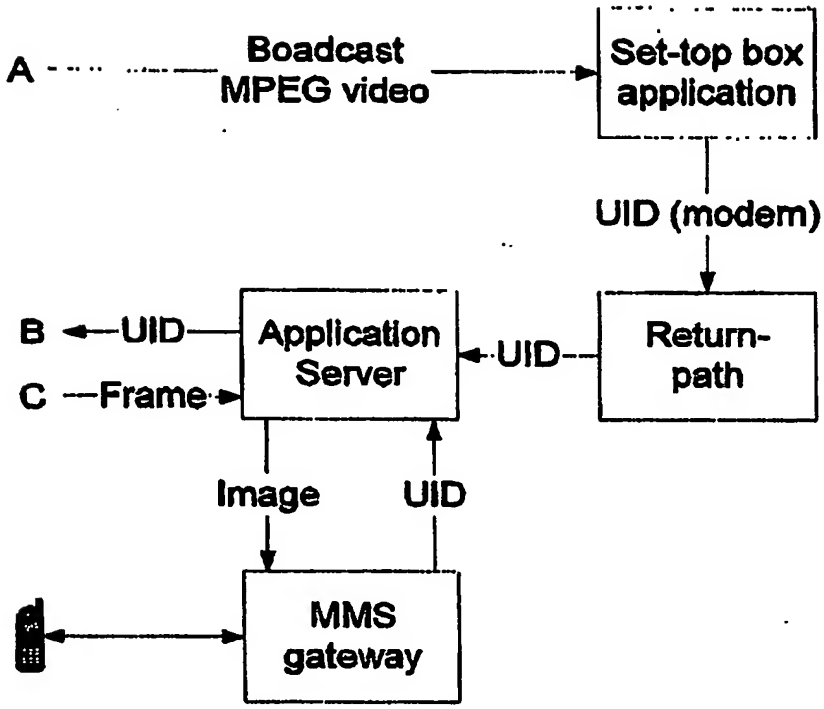

A
Boadcast
MPEG video
Set-top box
application
UID (modem)
B
UID
C
Frame
Application
Server
UID
Return-
path
Image
UID
MMS
gateway

Fig. 7C

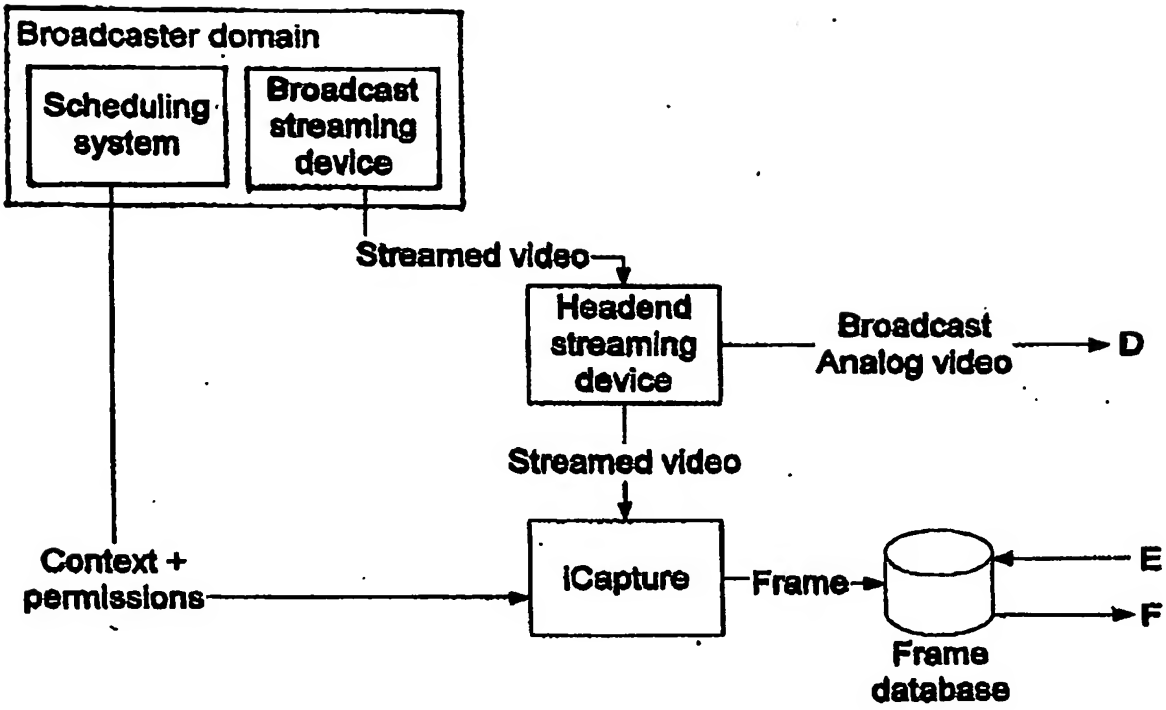

Broadcaster domain
Scheduling system
Broadcast streaming device
Streamed video
Headend streaming device
Broadcast Analog video
D
Streamed video
Context + permissions
iCapture
Frame
E
F
Frame database

Fig. 7D

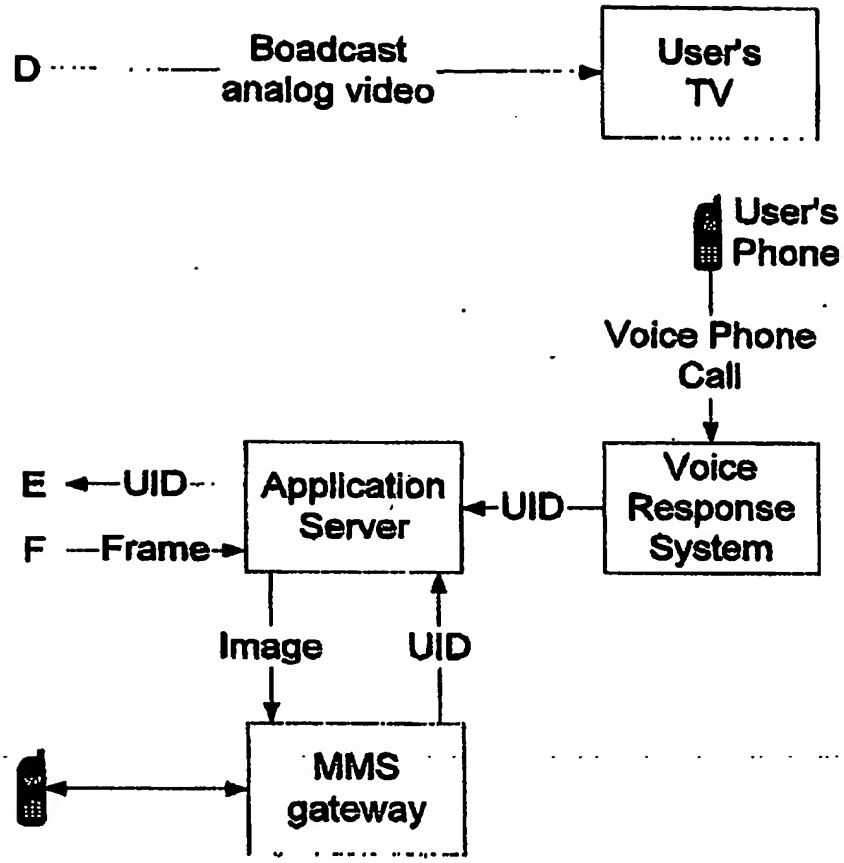

D
Boadcast analog video
User's TV
User's Phone
Voice Phone Call
E
UID
F
Frame
Application Server
UID
Voice Response System
Image
UID
MMS gateway

Fig. 8

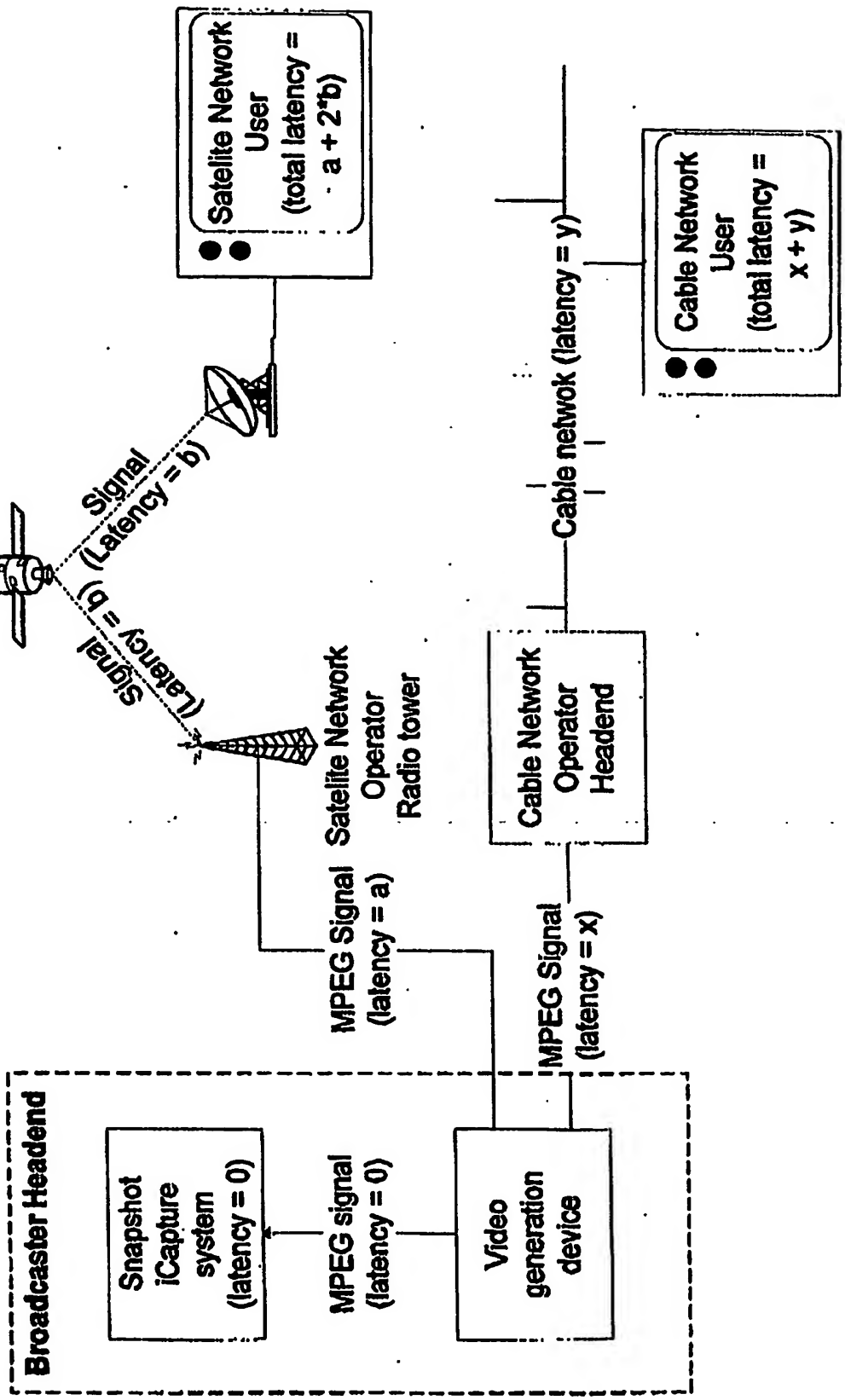

Broadcaster Headend
Snapshot iCapture system (latency = 0)
MPEG signal (latency = 0)
Video generation device
MPEG Signal (latency = a)
MPEG Signal (latency = x)
Satellite Network Operator Radio tower
Cable Network Operator Headend
Satellite
Signal (Latency = b)
Signal (Latency = b)
Cable netwok (latency = y)
Satelite Network User (total latency = a + 2*b)
Cable Network User (total latency = x + y)

Fig. 9A

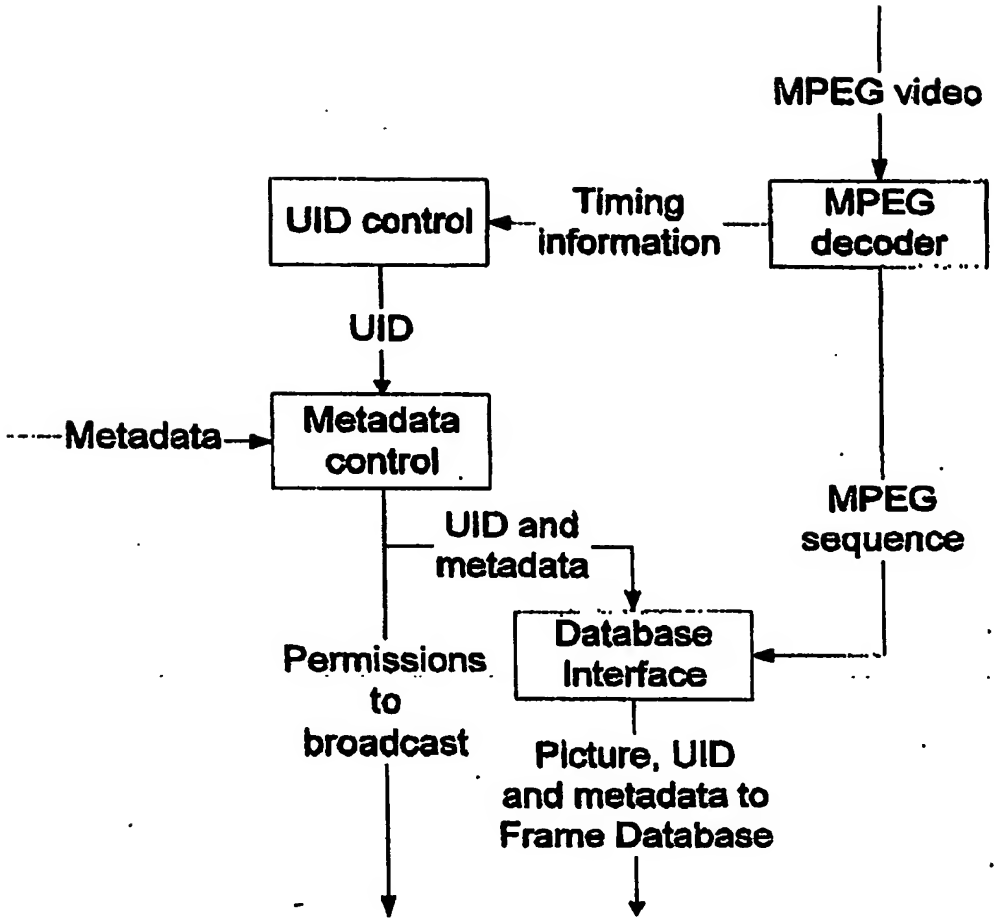
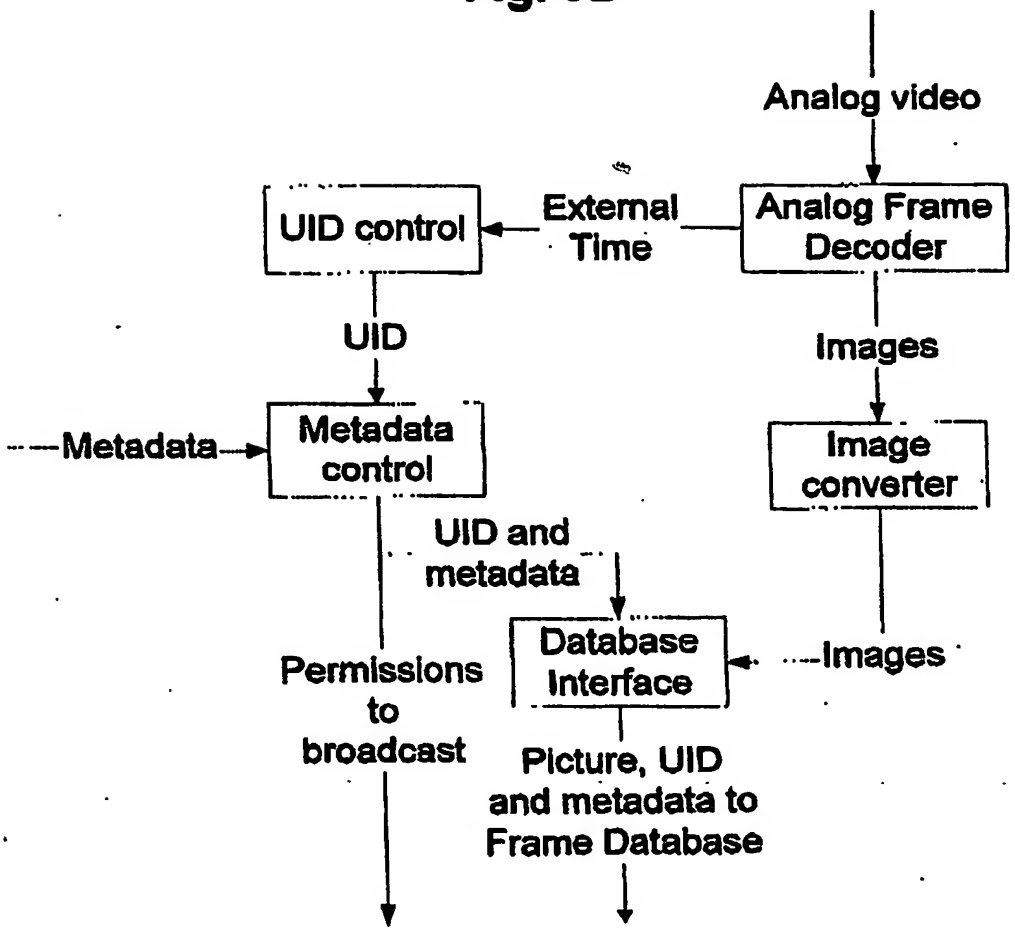

MPEG video
UID control
Timing information
MPEG decoder
UID
Metadata
Metadata control
MPEG sequence
UID and metadata
Database Interface
Permissions to broadcast
Picture, UID and metadata to Frame Database

**Fig. 9B**


Analog video
UID control
External Time
Analog Frame Decoder
UID
Images
Metadata
Metadata control
Image converter
UID and metadata
Database Interface
Images
Permissions to broadcast
Picture, UID and metadata to Frame Database

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